

An Expert System for Generating Medical Screening Examination Reports

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Physicians rarely send letters to patients. Those who do find it to be a time consuming and expensive process and the results are often unsatisfactory. The Medical Screening Examination (MSE) -- an "expert system" dedicated to medical screening -- solves these problems by producing individualized, comprehensive, multiple page letters based on simple physical examination and laboratory data. The system is intended for medical groups and organizations which perform large numbers of "annual" screening exams.

MSE is written in Visual Basic and will run on any IBM-compatible PC operating under Windows 3.1. The user enters historical, laboratory and examination data in a series of screens. (In fact most of the data is entered into a single screen.). No interpretation of these data elements needs to be made -- MSE takes care of this. Errors are minimized by range checking variable data that are keyed in, and by restricting other types of data entry to choices from a variety of comprehensive lists. Once the data are entered, a button is selected and MSE applies hundreds of rules to them, rapidly producing an individualized multiple-page patient letter stressing physical findings, risks, and recommendations for risk reduction.

The letter can be displayed for immediate review, editing and printing, and the raw data and the letter can be saved in a database for subsequent use. The entire process rarely takes more than 5 minutes.

The advantages of the MSE system over traditional methods of producing these letters (custom typing or using word processors to generate boilerplate paragraphs) are numerous. The most significant are:

1. **Minimal physician involvement.** Typically the physician will only have to review and sign the completed letter. Letters can be

generated by non-technical personnel.

2. **Highly accurate reports.** Errors of omission and commission are eliminated. It is impossible, for example, to report an abnormality without a comment being made on it, and it is equally impossible to see a comment about a condition that has not been mentioned in the report.
3. **Consistent Recommendations.** Recommendations are consistent, and are based on sex, age, and identified risk factors. Recommendations for subsequent screening procedures are given for every patient.
4. **Rapid Report Production.** No more than 4-5 minutes are required for the typical letter.
5. **Database Storage of Data.** MSE saves all data elements on a database for retrieval and analysis. Demographic and medical information is available from year to year, and does not have to be re-entered.

MSE will save will save time and money in the proper setting, and will produce a superior product.